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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,842	09/10/2003	James P. DeYoung	5697.57CT	5522
20792	7590	07/20/2006	EXAMINER	
MYERS BIGEL SIBLEY & SAJOVEC			CARRILLO, BIBI SHARIDAN	
PO BOX 37428			ART UNIT	
RALEIGH, NC 27627			PAPER NUMBER	

1746

DATE MAILED: 07/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No. 10/659,842	Applicant(s) DEYOUNG ET AL.	
	Examiner Sharidan Carrillo	Art Unit 1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 43-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 43-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cotte et al. (US2003/0003762) in view of Mullee et al. (6277753).

Cotte et al. teach a composition comprising liquid carbon dioxide and a fluoride-

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generating species. Paragraph 24 teaches a pyridine:hydrogen fluoride adduct, which is the same as pyridium poly (hydrogen fluoride), based on applicant's specification.

Paragraph 33 teaches the composition further comprising surfactants and cosolvents.

Cotte et al. teach a nonaqueous composition as further evidenced by the teaching of using hydrocarbon cosolvents.

Cotte et al. fail to teach the specific concentrations of the HF and liquid carbon dioxide. Mullee et al. teach a composition for removing residue from a semiconductor substrate, the composition comprising a) a supercritical CO₂ and a small amount of chemical admixture (0.1 to 15% of a mixture of solvents) comprising hydrogen fluoride and ammonium hydroxide (Lewis base, col. 2-3 bridging, col. 3, lines 1-7, claim 6).

Mullee et al. teach 0.1 to 15% of a mixture of solvents. Therefore, the concentration of CO₂ is 75% to 99.9% which reads on the claim language. Absence a showing of criticality, it would have been obvious and within the level of the skilled artisan to adjust the concentration of the solvents and CO₂, as needed, depending upon the amount and type of contaminants present and the desire to remove unwanted material from the substrate surface in a timely and efficient manner. In reference to claim 44, Mullee et al. teach co-solvents such as alcohols having a concentration range of .0.1-15%/

4. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cotte et al. (US2003/0003762) in view of Mullee et al. (6277753), as applied to claim 43, as described in paragraph 3 above, and further in view of Xu et al. (US2003/0125225).

Cotte et al. in view of Mullee et al. teach the invention substantially as claimed

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with the exception of the concentration of surfactant. Xu et al. teach cleaning formulations comprising supercritical CO₂ in combination with co-solvents and surfactants (paragraph 40). Paragraph 50 teaches that the concentration of the components may be present at any suitable concentrations and relative proportions, as appropriate to the use of the formulation in removing unwanted material from the substrate surface. Paragraph 51 teaches 0.1% and 5%, which are further supported by the claim to priority to the Provisional Application 60/345900. It would have been well within the level of the skilled artisan to have modified the method of Cotte et al., to include adjusting the concentration of surfactant since Xu teaches that the concentration of the components may be present at any suitable concentrations and relative proportions, as appropriate to the use of the formulation in removing unwanted material from the substrate surface and further teaches both 0.1 and 5% by weight of surfactant.

Response to Arguments

5. The allowability of claims 43-45 is withdrawn in view of the newly cited reference of Cotte et al., as applied above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharidan Carrillo whose telephone number is 571-272-1297. The examiner can normally be reached on M-W 6:30-4:00pm, alternating Thursday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on 571-272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sharidan Carrillo
Primary Examiner
Art Unit 1746

bsc


**SHARIDAN CARRILLO
PRIMARY EXAMINER**